

**Division 21 – Fire Suppression**

## 21.1. General

- a. Refer to **CPSM 4.5 FIRE PROTECTION INFORMATION PLAN AND FIRE SAFETY SYSTEMS, 4.6 FIRE SAFETY REVIEW OF SHOP DRAWINGS** and throughout **CHAPTER 5 – PROJECT SUBMITTAL STANDARDS** for detailed requirements which must be incorporated into all projects. In the case of a conflict between these Design Standards and the CPSM, the CPSM shall take precedence.
- b. Fire department building and riser connections shall be coordinated through ODU's Risk Management office and the University's Fire Prevention Manager. Ultimate approval of connections and design will be by BCOM for capital projects and the State Fire Marshall for all others.

## 21.2. Miscellaneous

- a. Provide a fire alarm input module to monitor the AC power of the sprinkler air compressor.
- b. Bolt down all incoming sprinkler lines from thrust block to flange with approved fasteners.
- c. Install placards at sprinkler riser with engraved hydraulic data, not permanent marker.
- d. Copper compression fittings shall not be used on sprinkler air compressor feeds.
- e. All dry valves to be manually resettable without removing face bolts.
- f. Provide floor drain and associated pit, in all sprinkler valve rooms, capable of handling the discharge at full flow or discharging the full flow to the exterior of the building. If discharged to the exterior, coordinate the landscape to accommodate the force of the discharge, without destroying planting, turf, etc. Consider heavy river rock or other material that can withstand the force of the discharge. Discharging to the exterior is preferred.
- g. Provide single action fire alarm pull stations.

## 21.3. Knox Box

- a. Locate the Knox Box adjacent to main entrance and coordinate location with ODU Project Manager, the ODU Fire Prevention Manager and the Fire Marshall. Location of the Knox Box shall be shown on the exterior elevations in the Preliminary Design Submittal for review and maintained as part of the working drawings.
- b. Knox-Boxes shall be 3200 series and recessed into masonry construction.

## 21.4. Fire Hose Cabinets

- a. Renovations of spaces that have fire hose cabinets shall remove hoses.
- b. In new construction, where fire hose cabinets are required, cabinets shall be installed without fire hoses.

## 21.5. Fire Extinguishers and Cabinets

- a. Locate Fire Extinguisher Cabinets on normal egress routes, in close proximity to doorways. Specific rooms, such as labs or kitchens shall locate cabinets in highly visible locations not prone to being blocked.
- b. Fire extinguishers and cabinets shall be specified by the A/E. Cabinets shall be stainless steel or brushed aluminum, semi recessed with vertical identification lettering on both sides of the frame visible on edge of cabinet, contractor furnished and installed. Fire Extinguishers shall be purchased by ODU and installed by the contractor. Refer to **APPENDIX M – SIGNAGE** for Fire Extinguisher Cabinet Signage.
- c. If quick response sprinkler heads are used on a project, the University still desires fire extinguisher cabinets.

## 21.6. Backflow Preventer

- a. A separate backflow preventer for fire protection shall be provided.

- b. Provide floor drain, capable of handling the discharge at full flow or to the exterior of the building.

21.7. Water Service

- a. All buildings, no matter the size shall have a separate water service for fire protection and shall not be through the domestic metered water system.

21.8. Fire Pumps

- a. Connect fire pump controller to building generator.
- b. All drain lines shall be copper with sweat fittings.
- c. All associated plumbing hardware shall be properly supported.
- d. All pump discharge lines shall be monitored for flow at their respective locations.

21.9. Sprinkler Heads

- a. The University does not desire quick response heads in **Residence Halls**.
- b. If quick response heads are intended to be specified on a project, the A/E shall notify the ODU Project Manager for approval.
- c. Coordinate with NFPA 1383.
- d. Side wall sprinkler heads in **Residence Halls**, shall endeavor to be located over doorways or wall openings so as to discourage the use of the heads as coat hangers. When side wall sprinkler heads are installed in student rooms above solid walls, warning signage shall be provided as part of the contract documents.



21.10. Control Valves

- a. All control valves, including post indicator (PIV) and wall indicator valves, shall be electrically supervised by the fire alarm panel. Locate the post indicator valve (PIV) on the exterior of the building split from domestic water and must accept Best padlock, provided by owner.
- b. FDC should be located on the street side of a building with easy access for Fire Department and at a distance away from the building, outside of the building collapse zone where possible. Fire Department Connections (FDC) are preferred to be placed at same location as Post Indicator Valve (PIV). A wall mounted FDC can be considered if reviewed and approved by the ODU Fire Safety Manager.
- c. Control valves shall only be installed in corridors, stairwells, mechanical rooms, fire pump rooms and sprinkler valve rooms and shall be easily accessible. The control valves shall be accessible with the use of no more than a six foot stepladder. Provide 24" x 24" access door for valves located above inaccessible ceilings. At all locations that control valves are concealed above ceilings or behind access doors, a sign shall be provided on the ceiling below the valve or on the access door indicating the location of the control valve. Refer to **APPENDIX J – SIGNAGE** for signage standard.
- d. All control valves that are located in spaces accessible by the occupants of the building shall be provided with lockable tamper prevention devices and/or locks as specified by the University.
- e. Control valves shall not be installed, above or below ceilings in classrooms, offices, conference rooms or any **Residence Hall** living quarters.
- f. Each control valve shall be supplied with a sign indicating the area of the building that is served by the valve.

21.11. Inspector Test Valves (ITV)

- a. Inspector test valves shall only be installed in mechanical rooms, corridors, stairwells, fire pump rooms, sprinkler valve rooms and custodial closets and shall be easily accessible. The ITV's shall be accessible with the use of no more than a six foot step ladder.

- b. At all locations that ITV's are concealed above ceilings or behind access doors, a sign shall be provided on the ceiling below the valve or on the access door indicating the location of the ITV.
- c. Inspector test valves shall not be installed, above or below ceilings, in classrooms, offices, conference rooms or in Residence Hall living quarters or in any area requiring entry through a classroom, office, conference room or any dormitory living quarters.
- d. Drain valves shall only be installed in corridors, stairwells, mechanical rooms, fire pump rooms and sprinkler valve rooms and shall be easily accessible. The drain valves shall be accessible with the use of no more than a six foot stepladder.
- e. Drain valves shall not be installed, above or below ceilings, in classrooms, offices, conference rooms or in dormitory living quarters, or in any area requiring entry through a classroom, office, conference room or any dormitory living.
- f. ITV main drain discharge shall be piped to the exterior of the building. Auxiliary drain valves discharge shall be piped to a drain capable of handling the discharge at full flow or to the exterior of the building.

#### 21.12. Fire Sprinkler Piping

- a. Each floor shall have a supervised isolation valve.
- b. Sprinkler head braided flex connections are desired. Contractor shall install braided flex connections in the appropriate length and with minimum bends in the appropriate radius.
- c. Schedule 40 steel pipe is allowed.
- d. Piping material types shall not be intermixed i.e. do not mix black and galvanized piping.

#### 21.13. Dry and Pre-Action System Fire Sprinkler Piping (Per BCOM Newsletter 08/2017)

- a. Galvanized piping in dry systems is not allowed,
- b. Black steel pipe shall be used in dry fire sprinkler systems with a monitored Nitrogen generating system that maintains a 98% nitrogen level.

#### 21.14. Standpipes

- a. All penetrations to accommodate standpipes shall have a drill doughnut/cutout permanently attached at location – per the NFPA code

#### 21.15. Commercial Kitchen Hoods

- a. Each group/gang hood system shall have its own pull station and suppression system. Each independent hood shall have its own pull station and suppression system.
- b. When multiple hoods are used, clearly label which hood is associated with which pull station.

#### 21.16. Residence Hall Kitchen Hoods

- a. All residence hall apartments that have cooking facilities shall have heat only detection in the immediate area.
- b. Self-contained suppression hoods required in all common cooking areas.

#### 21.17. Signage

- a. Refer to **APPENDIX M – BUILDING SIGNAGE** for signage requirements associated with Fire Department Connections (FDC), Post Indicator Valves (PIV) and Sprinkler Rooms. Location of all required signage shall be shown on the exterior elevations in the Preliminary Design Submittal for review and maintained as part of the working drawings.

#### 21.18. Fire Protection during Construction.

- a. In renovation and or addition projects, where the building is to remain occupied during construction, the following measures shall be included in the Contract Documents:
  - 1. All existing fire protection systems shall remain operational during construction. If temporary shutdown is necessary, the system shall be returned to operational condition as soon as possible and no later than the end of each working day prior to the Contractor leaving the job site.
  - 2. The Contractor is to notify the University Fire Prevention Manager, 48 hours in advance of any necessary shutdowns. Any necessary shutdowns shall not affect other areas not involved with the construction project.
  - 3. All operational standpipes are to be maintained at all times.
  - 4. Sprinkler systems in areas being renovated shall be operational when the Contractor leaves the site each day.
  - 5. A contractor provided fire watch shall be provided at all times that a sprinkler system and/or fire alarm system is inactive.
- b. Specifications shall indicate that following the completed installation, ODU's Fire Prevention Manager and their independent consultant will inspect the installation prior to final inspection and acceptance by the State Fire Marshal and report any deficiencies.
- c. Fire Alarm Device Color